Method of Test for

SLUMP OF PORTLAND CEMENT CONCRETE

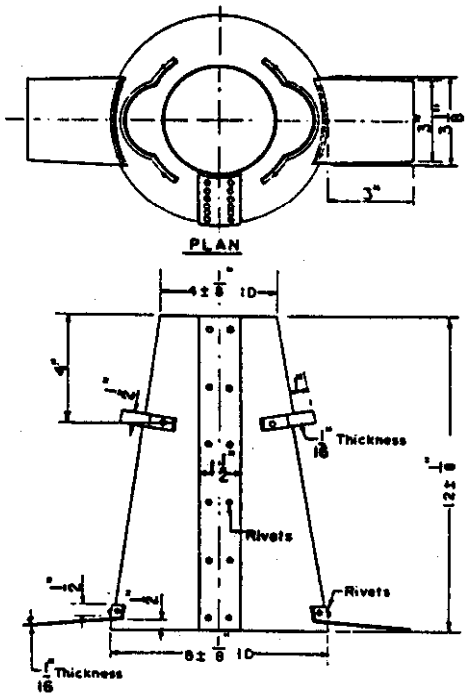
DOTD Designation: TR 207-83

Scope

1. This method of test covers the procedure to be used for determining slump of portland cement concrete containing aggregates less than two inches (51 mm) in size.

Apparatus

2. (a) *Mold* - The test specimen shall be formed in a mold made of metal not thinner than No. 16 gage and not readily attacked by cement paste. This mold shall be in the form of the lateral surface of a frustrum of a cone with the base 8 ± 1/8 in. (203 ± 3 mm) in diameter, the top 4 ± 1/8 in. (102 ± 3 mm) in diameter, and the height 12 ± 1/8 in. (305 ± 3 mm). The base and top shall be open and parallel to each other, and at right angles to the axis of the cone. Foot pieces and handles shall be attached to the mold as shown in Figure 1. The mold may be constructed with or without a seam. Any seam shall be constructed as shown in Figure 1 so that the interior surface of the mold will be smooth.



Metric Equivalents

in.	1/16	1/8	1/2	1	1 1/2	3	3 1/8	4	8	12
mm	1.6	3.2	12.7	25.4	38.1	76.2	79.4	102	203	305

Figure 1 Mold for Slump Test.

(b) *Tamping Rod* - The tamping rod shall be a round, straight steel rod, 5/8 in. (16 mm) in diameter and approximately 24 in. (610 mm) in length, having one end rounded to a hemispherical tip, the diameter of which is 5/8 in.

Sample

3. The sample shall be obtained in accordance with DOTD Designation: S 301 of the Materials Sampling Manual.

4. (a) Dampen the mold and place it on a flat, moistened, nonabsorbent rigid surface. Stand on the two foot pieces in order to hold the mold firmly in place while filling it. From the sample of concrete obtained in paragraph 3, immediately fill the mold in three layers, each approximately 1/3 the volume of the mold. As a guide, note that 1/3 of the volume of the slump mold fills it to a depth of 2 5/8 in. (67 mm); 2/3 of the volume fills the mold to a depth of 6 1/8 in. (156 mm).

(b) Rod each layer 25 times with the tamping rod. Distribute the strokes uniformly over the cross section of each layer. For the bottom layer, this will necessitate inclining the rod slightly and making approximately half of the strokes near the perimeter, then progressing with vertical strokes spirally toward the center. Rod the bottom layer throughout its depth. Rod the second layer and the top layer each throughout its depth, so that the strokes just penetrate into the underlying layer.

(c) In filling and rodding the top layer, heap the concrete above the mold before rodding is started. If the rodding operation results in subsidence of the concrete below the top edge of the mold, add additional concrete above the top of the mold. After the top layer has been rodded, strike off the surface of the concrete by means of a screeding and rolling motion of the tamping rod. Remove any spilled concrete from the rigid supporting surface.

(d) Raise the mold immediately by lifting it carefully in a vertical direction being careful not to impart any lateral or torsional motion to the concrete. The operation of raising the mold shall be completed in approximately five seconds. The entire operation from start of the filling through removal of the mold shall be carried out without interruption and shall be completed within an elapsed time of two minutes. The entire operation shall be completed within five minutes from the time the sample is taken.

(e) Immediately measure the slump by determining the vertical difference between the height of the

mold and the height of the slumped concrete over the original center of the base of the specimen. If a decided falling away or shearing off of concrete from one side or portion of the mass occurs, disregard the test and make a new test on another portion of the sample.

If two consecutive tests on a sample of concrete show a falling away or shearing off of a portion of the concrete from the mass of the specimen, the concrete probably lacks necessary plasticity and cohesiveness for the slump test to be applicable.

(f) Immediately after each use of the mold, wash all concrete or paste from the interior and exterior surfaces. The mold must be kept absolutely clean at all times. No accumulation of concrete or rust shall be allowed to form.

Report

5. Record the slump as measured in terms of inches (mm) to the nearest 0.25 in. (6.4 mm) of subisdence of the specimen.

Reference

AASHTO Designation: T 119

Normal testing time is 5 minutes.